

CHAPTER N

CITY OF CORONADO

CONSERVATION ELEMENT

ADOPTED

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Foreword

The City of Coronado has been required by State law since 1973 to have within its General Plan Policy Document a Conservation Element. Government Code Section 65302 (d) states that the element must address the conservation, development, and utilization of natural resources including water and its hydraulic force, forests, soils, rivers and other waters, harbors, fisheries, wildlife, minerals, and other natural resources.

In the formation of this element, the following questions were considered:

1. What natural resources within Coronado are deserving of conservation?
2. How should selected natural resources be conserved or developed?
3. How should the City encourage the appropriate preservation, enhancement, and/or utilization of natural resources within the City?

The issues addressed within the Conservation Element are closely linked with other elements of the General Plan, particularly the Open Space Element. When applicable, the user of this document may be referred to other elements that concern similar and related issues and opportunities.

Sources quoted or referenced are listed in the Conservation Element's Bibliography on page II-N15 and are referenced in the following manner:

"Quotation or data" ⁴

Read: Quotation or data taken from bibliographic entry 4.

Summary

The purpose of this study was to determine the effect of a 12-week training program on the physical fitness and health of sedentary middle-aged men. The subjects were 20 men, aged 40-50, who had been sedentary for at least 10 years. They were divided into two groups: a control group and an experimental group. The experimental group participated in a supervised training program consisting of three sessions per week, each lasting 45 minutes. The control group remained sedentary throughout the study.

The following variables were measured at the beginning and end of the study:

1. Maximal heart rate (HR_{max})

2. Resting heart rate (HR_{rest})

3. Maximal oxygen consumption (VO_{2max})

4. Blood pressure (BP)

5. Body weight (BW)

6. Waist circumference (WC)

7. Blood glucose (BG)

Conservation Element

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Introduction

Conservation is defined as the planned management, preparation, and wise utilization of natural resources. Although Coronado is mostly developed and as such provides an urbanized setting, there are natural resources that exist; therefore proper planning must occur in order to ensure these resources are available for future generations.

The purpose of the Conservation Element is to provide goals, objectives, and strategies that will prevent the wasteful exploitation, destruction, or neglect of existing natural resources by addressing the conservation and utilization of said natural resources, including water and its hydraulic force; soils; rivers and other waters; harbors; fisheries; wildlife; minerals; and other natural resources as each of these areas apply to the City of Coronado. In addition, this element will address shoreline erosion and preservation.

Due to the relatively urbanized environment of the City, there are no agricultural lands, forests, creeks, streams, or rivers within the City of Coronado. Therefore, these issues will not be addressed. Biological resources and mineral resources are discussed in the Open Space Element, and as such the user of this document will be referred to applicable sections of that element when necessary.

The Goal of the Conservation Element Is:

To protect, conserve, and enhance Coronado's natural and cultural resources.

Introduction

The purpose of this study is to investigate the effects of the proposed system on the performance of the system. The study is divided into two main parts: a theoretical analysis and an experimental evaluation. The theoretical analysis is based on the principles of the system and the experimental evaluation is based on the results of the experiments.

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The Proposed System

The proposed system is a new system that is designed to improve the performance of the system.

Aspects of the Conservation Element

A. WATER RESOURCES

1. Watersheds and Hydrology

a. Surface Water

There are no significant watersheds (i.e., rivers, creeks, streams, etc.) within the City of Coronado that could supply potable water, or give reason for water-related pollution concerns.

b. Groundwater

Aquifers contain groundwaters and are generally recharged by the entire porous land surface above them. In general, in the San Diego region groundwaters are poor in quality and limited in quantity. Within the City of Coronado, the high concentration of sulfates and chlorides prevents the use of groundwater for potable purposes. Therefore, the City is reliant upon imported potable water.

The groundwaters beneath Coronado are replenished by the infiltration of rainfall and surface flow. Although the groundwaters are not suitable for potable purposes, these groundwaters do serve the important function of preventing the intrusion of brackish waters that would otherwise occur from the surrounding salt water bodies.

2. Domestic Water Supply

As described above, the City of Coronado does not have the resources to supply or store its own water, and as such is highly dependent upon imported water. The entire City is supplied with potable water by the California-American Water Company, which is a privately owned utility.

The California-American Water Company purchases its water supply from the City of San Diego. The City of San Diego is a member agency of the San Diego County Water Authority (CWA), which in turn is a member of the Metropolitan Water District of Southern California (MWD). MWD is responsible for importing and distributing water from the Colorado River Aqueduct and the State Water Project. Approximately ninety percent (90%) of the local water supply is imported, with the remaining ten percent supplied by local reservoirs and aquifers.

Addressing the issue of future water supply is extremely important not only to the City of Coronado, but to the entire San Diego County region. This is mainly because each jurisdiction is, in essence, in competition for the same source of water; and each must

ARTICLE IN BRIEF

1. The Problem of the Future

A. Introduction

The future of the world is a problem of the first importance. It is a problem which concerns every individual and every nation. It is a problem which has been the subject of much speculation and discussion.

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address crucial issues relating to the supply, distribution, use, and conservation of water. It is interesting to note that since 1990-1991, after six consecutive years of drought, demand for water (urban and agricultural) had actually decreased. This decrease can primarily be attributed to delivery reductions brought on by the drought, which has led to conservation efforts on the part of policy makers and consumers.¹⁰ Coronado, as well as many other jurisdictions, have implemented programs that encourage the conservation of water.

According to 1990 Census data, the population of the San Diego County region in 1990 was 2,498,000; SANDAG projections indicate population in the year 2010 to be 3,547,000.⁸ Therefore, demand for water will likely increase. Nevertheless, the water supply is only as dependable as the total amount of water that is made available to MWD from the Colorado River Aqueduct and the State Water Project. Locally, in order to meet possible increased future demands for water, the California-American Water Company has a contract with the City of San Diego that guarantees the ability to indefinitely purchase unlimited amounts of water.

3. Boat Anchorage/Marina Facilities

The existing boat anchorage and marina facilities located within San Diego Bay and in the City of Coronado provide important functions to recreational and commercial boaters. Marina or anchorage facilities exist in Glorietta Bay, at the Naval Amphibious Base, at Crown Isle, on the bayside within the Silver Strand State Beach, within the Coronado Cays subdivision, and near the San Diego-Coronado Bridge. These marina and anchorage facilities also enhance the visual quality of the Bay. The locations practical for such marinas and safe harbors are limited, particularly when the existing channels and environmentally sensitive areas are taken into account.

B. LAND RESOURCES

1. Land Characteristics-Topography

The City of Coronado is located on a narrow northwest-trending coastal plain, which is a part of the coastal plain of Southern California.¹³ Coronado is situated on a peninsula and is surrounded on three sides by the Pacific Ocean, San Diego Bay, and Glorietta Bay; the City of Imperial Beach abuts the southernmost boundary. The City has relatively flat terrain and is, on average, approximately 25 feet above sea level, with no canyons or large slopes. The highest elevation in the City is located on the Naval Radio Receiving Facility property and consists of a manmade slope that is approximately 60 feet above sea level. There are two other areas in the City that are approximately 40 feet above sea level, which are approximately one block in width and are located on both sides of Orange Avenue and Fourth Street.

2. Geology

"Basement rocks underlying the Coronado area are the California batholith of Cretaceous time and Santiago Peak volcanics of the Jurassic era. Post-batholithic rocks of the coastal plain are mainly clastic marine sedimentary deposits that cover the older rocks and commonly dip gently toward the west and southwest. These rocks range in age from Cretaceous to Quaternary and consist chiefly of beds of sandstone, shale and conglomerate. The base rock formations near the surface in most of Coronado are cemented sedimentary materials referred to as the San Diego Formation...deposited during the Pliocene epoch of the tertiary period. This formation is a firm sandstone which ranges from 25 to 150 feet deep and has an unknown thickness."⁴ "Overlying the San Diego Formation is the Bay Point Formation, consisting of loose unconsolidated sands, silts, and gravel."¹¹

3. Soils

a. Soil Types

It has been determined that the soil types within the City of Coronado are not suitable for commercial agricultural purposes due to insufficient fertility quality and inappropriate texture. As such, these soil types are more suitable for urban land uses. The United States Department of Agriculture, Soil Conservation Service (SCS) has classified six soil types that are within the City of Coronado. These soils consist of the Marina Loamy Coarse Sand, Made Land, Coastal Beaches, Urban Land, Tidal Flats, and Huerhuero-Loam. Predominantly present in Coronado are Marina Loamy Coarse Sand, Made Land, and Coastal Beaches. Tidal Flats and Huerhuero-Loam are located between the Coronado Cays and Imperial Beach. To identify soil type locations, please refer to the Soils map in the General Plan Data Document.

Marina Loamy Coarse Sand is characterized by loamy coarse to loamy sand, 02 to 09% slopes, on gentle ridges; Made Land is smooth, level fills from dredge, soil, fine bay clays to coarse sands; Coastal Beaches are gravelly and sandy beaches that can be covered during high tide and stormy periods; Urban Land is soil that has been altered by urban development; Tidal Flats consists of clay to very fine sand, level, and periodically covered by tides and saline; and Huerhuero-Loam is clay loam to sandy loam with 02 to 09% slopes, and alluvial fans.

"Unconsolidated deposits of Holocene estuarine (Qhe), which typically consist of gray fine sand that is interbedded with gray silty sand, sandy silt and silty clay, are found in the vicinity of Glorietta Bay and the San Diego-Coronado Bay Bridge Toll Plaza. These types of deposits are typically located in the lower reaches of drowned rivers and in San Diego Bay. Estuarine materials are derived from river-borne sediments and were deposited at or below sea level that has been rising since the beginning of the Holocene. During the past century, estuarine deposits have either been removed from many boat and ship channel

areas by dredging or covered with fill to create additional land for development along the shoreline."⁴

It has been reported that all of the naturally occurring soils that exist as an overburden to the San Diego Formation bedrock in the Coronado area are sufficient to support structure foundations. A soil hazard identified by the U.S. Navy is the potential for liquefaction on the portions of North Island Naval Air Station and the Naval Amphibious Base that have Made Land (which the Navy refers to as "Artificial Fill") during periods of substantial seismic activity.^{2, 3} Other soil related hazards are addressed in Chapter "J", the Disaster Preparedness Element, Chapter "K", the Public Safety and Seismic Safety Element, and Chapter "M," the Open Space Element of the General Plan, as well as in the General Plan Data Document.

b. Shoreline/Beach Erosion

The wide, sandy beaches that line the City of Coronado are significant natural resources that are important assets not only for environmental reasons, but also because the beaches provide residents and visitors with recreational and leisure time opportunities.

Due to natural and man-induced coastal processes, the shorelines along Coronado (and elsewhere in San Diego County) experience constant, gradual erosion which increases during major ocean storms. The beaches of Coronado are within the Silver Strand Littoral Cell, which extends from south of the International Border to the Zuniga jetty at San Diego Bay. The general littoral drift of the Silver Strand Littoral Cell carries sand northward and deposits it at the Zuniga Shoal. Historically, the single natural source of new sands for the beaches along the Silver Strand has been from sediments deposited from the mouth of the Tijuana River. The higher the volumes of water in the river, the greater the amount of sediments that were transported northward. Heavy winter storms and overall periods of low rainfall have contributed to the erosion process by reducing the quantities of natural supplements of sand to the beaches of Coronado.

As mentioned above, man-induced processes have contributed to the problem of beach erosion. Construction of dams, reservoirs, flood control systems, and other development along the coastline has eliminated the principal natural source of sand going to the beaches in San Diego County by restricting the natural flow of sediments. The beaches of Coronado have been directly affected by the construction of dams on the Tijuana River and its tributaries. As a result of this, the beaches have had to be replenished utilizing other sources. In the City of Coronado, an example of beach replenishment has been the deposition of dredged sand fill from San Diego Bay by the U.S. Navy. It has been determined that the beaches will periodically need to be replenished in order to preserve the shoreline.¹²

It is understood that shoreline erosion issues are not city specific, but are regional in nature. To address this issue, in July of 1993 SANDAG adopted the "Shoreline Preservation Strategy For The San Diego Region." This report identifies erosion

problems within the Silver Strand Littoral Cell (along with the other littoral cells in the County), and contains strategies, financing methods, and policies that can be implemented by local jurisdictions for the preservation of beach shorelines. The Coronado City Council supported the adoption of these strategies.

c. Soil Contamination

Pollution can degrade the usefulness of the City's lands. The dumping or burying of wastes, or allowing the noxious or toxic waste products of industrial or commercial activities to remain where they fall, can cause great environmental harm and expense. Subterranean storage tanks can deteriorate and allow plumes of harmful liquids to spread under neighboring properties. Such plumes and runoff from waste dumps can in turn destroy the ecosystems in coastal waters.

While Coronado's soil contamination problems have been few and small, such problems have occurred, particularly on U.S. Navy property. Firing ranges have left explosives, boat yards and dumps have left toxic soils; and gas and cleaning fluid tanks have left plumes. Most of these contamination problems are undergoing investigation and clean up, and the public is not felt to be presently at risk from these hazards.⁶

4. Mineral Resources

Conservation and preservation of mineral resources is addressed in Chapter "M," the Open Space Element of the General Plan. These policies relate to the preservation of the salt ponds located near the southern boundary of the City, which are used for commercial extraction of salt. The salt ponds are also important as a habitat for many birds and marine life.

5. Cultural Resources

a. Archaeological Resources

Understanding of archaeological resources is important because these tangible resources provide an understanding of past cultural life. The three most common and identifiable prehistoric cultures within the San Diego area are the San Diegieto, La Jollan, and Diegueno cultures.

It is believed the oldest culture in the San Diego area was the San Diegieto culture. This nomadic hunting culture existed approximately 12,000 to 14,000 years ago. However, the San Diegieto culture probably did not exist in Coronado because these people were more associated to lands east of the Laguna Mountains.

Approximately 7,000 to 9,000 years ago, the most predominant Native American culture in the San Diego Bay area was the La Jollan culture. These people were known to have coastal encampments along bays, estuaries, and lagoons throughout San Diego County

and essentially existed by fishing. An indication of the La Jollan culture's presence in an area is the existence of large shell middens or refuse mounds.

Approximately 1,000 to 7,000 years ago the Diegueno people inhabited the San Diego Bay area. Although these people are more associated with having permanent settlement along drainage basins, temporary coastal encampments were set up. This is characterized by the existence of small, scattered shell middens. The Diegueno culture was known to be a gathering culture that was essentially vegetarian.

There are ten known recorded archaeological sites within the City of Coronado. The types of sites found within the City range from one located within the Navy Radio Receiving Facility property that is considered to have major archaeological significance to others that have little significance. Artifacts include shell middens, pottery fragments, mano fragments, and other indications of campsites.⁵

b. Paleontological Resources

Paleontological resources are considered to be limited, non-renewable resources of high scientific and educational value. Fossils are the remains or indications of once-living organisms. Beneath Coronado there are three stratigraphic formations- artificial fill, beach sands of the Holocene Age, and the Bay Point Formation from the late Pleistocene Age. The latter is considered to be of high paleontological significance because of the discovery of many diverse, fossilized marine molluscan assemblages, shark, ray, and fish remains from the Pleistocene Age.

c. Historical Resources

The Hotel del Coronado is one of the City's most recognized historic structures. The Hotel opened in 1888 and, among other things, is well known for its unique architecture. The Hotel del Coronado is the only historical structure within Coronado that is listed on the National Register of Historic Places. However, a historical site inventory prepared by the County of San Diego includes the Hotel del Coronado; the site where the first seaplane flight occurred; and the site of the first Military Flight School, which is known as Rockwell Field. The latter two sites are located at North Island Naval Air Station.

In addition to the resources listed above, numerous buildings in Coronado date from the City's early history and could be considered historic.

For more complete descriptions of historic resources in Coronado, please refer to the General Plan Data Document and the Historic Preservation Element of the General Plan (Currently being drafted). The focus of the draft Historic Preservation Element is to establish a voluntary designation process. There are presently four homes that have been designated as historic by the City's Historic Resources Commission.

C. BIOLOGICAL RESOURCES

1. Biological Communities

Preservation and conservation of Biological Resources are discussed in detail in Chapter "M," the Open Space Element of the General Plan. As such, the user of this document is encouraged to refer to the Open Space Element as well as the General Plan Data Document for more specific information on this topic.

The Open Space Element identifies five biological communities that provide important habitats for plants and wildlife. These are the Bay, Mudflat, Coastal Salt Marsh, Open Coast Sandy Beach, and the Coastal Strand communities. Federal and State listed endangered and/or threatened species have been known to utilize these communities for their habitat, therefore increasing the importance of implementing conservation policies.

2. Fisheries and Aquaculture

Aquaculture is the marine equivalent of agriculture; it involves the deliberate cultivation and harvesting of marine organisms. Aquaculture is closely tied to the commercial fishing industry. Although the commercial fishing industry is not particularly significant to the City of Coronado, it is important to the San Diego Bay region. Therefore, the preservation of good ocean and bay water quality is extremely important to these industries. Please refer to Chapter "M," the Open Space Element of the General Plan, for conservation and preservation policies that encourage the protection San Diego Bay and ocean water quality.

D. OTHER RESOURCES

1. Air Quality

Air quality and energy are two natural resources that are closely related. Many air quality issues are related to transportation issues; and many transportation issues are related to energy issues. For example, the largest single source of air pollution within most of the urbanized areas in California can be attributed to transportation-related energy uses. Approximately forty-eight percent (48%) of California's total energy consumption can be attributed to transportation.¹ Efficient energy conservation policies can actually be beneficial to air quality by reducing the amount of pollutants emitted.

Air is a natural resource that is vital to human health, safety, and existence. Increases in population, traffic congestion, and urbanization have caused the quality of the air we breathe to decline over the years. Air quality is determined by the amount and type of man made or natural pollutants that are dispersed into the atmosphere. By its very nature, air and its related airsheds are not contained within one community. Therefore, because poor air quality is hazardous to the entire San Diego County region, air quality management, policy formation, and implementation must occur on a regional basis. The following

discussion will briefly identify categories and causes of air pollution, current air quality regulations, and will discuss the innovative approaches the City has implemented to address the air pollution problem.

There are two categories of air pollutants which affect air quality. *Primary* pollutants are directly emitted from a source, and include carbon monoxide (CO), nitrogen oxide (NO) and nitrogen dioxide (NO₂), sulfur dioxide (SO₂), particulates, and other hydrocarbons (HC). Primary pollutants contaminate the air in the immediate area of the emission; as time passes, the pollutants disperse and then change chemically --becoming *secondary* pollutants. These chemical reactions form such secondary pollutants as ozone (O₃), photochemical aerosols, peroxyacylnitrites (PAN), and nitrogen dioxide (NO₂). Major sources of carbon monoxide and ozone pollution can be attributed to the emissions of motor vehicles and other equipment that are propelled by the internal combustion engine (exhaust contains hydrocarbons and nitrogen oxides).

Air quality is also determined by elements such as the climate and geography of the region. Factors such as air flow circulation, temperature inversion, wind conditions, and sunlight all contribute to how air pollutants are absorbed/dispersed within the atmosphere. Sunlight causes primary pollutants to chemically react to become damaging ozone/smog. Because the San Diego region has a high percentage of sunny days, there is a greater potential for this reaction to occur. Temperature inversions also intensify air pollution by providing a vertical barrier that condenses the pollutants near the ground and slows the rate of dispersion from the region.

The San Diego Air Basin comprises the entire County of San Diego, including Coronado. The relatively urbanized areas of San Diego County are surrounded by mountains, which can cause the "trapping" of contaminants. Wind conditions in the San Diego region and the air flow pattern retain air pollution in the region for extended periods rather than enabling the pollution to disperse elsewhere. At times, Santa-Ana winds blow air pollutants from Los Angeles and Orange Counties into San Diego County, which causes air pollution levels to exceed Federal and State standards.

The agency responsible for monitoring and achieving federal and state air quality standards within the San Diego Air Basin is the San Diego Air Pollution Control District (SDAPCD), which is actually governed by the County Board of Supervisors. The closest monitoring station to Coronado is in downtown San Diego, approximately 1.5 miles away. Although the monitoring data is not a true representation of Coronado's air quality, it can be considered indicative of the City's air quality. The standards for ozone at the downtown San Diego monitoring station were exceeded for eight days in 1992. For more specific monitoring station information and standards, please refer to the General Plan Master Data Document.

Air quality management regulations include the Federal Clean Air Act and the more stringent California Clean Air Act. In addition, pursuant to the California Clean Air Act, in 1992 the SDAPCD adopted the Regional Air Quality Strategy (RAQS), which provides

strategies that will improve regional air quality standards that are part of the State Implementation Program (SIP). In 1994, because San Diego is classified as a "Severe ozone non-attainment area," the SDAPCD adopted Title XIII. The objective of Title XIII is to meet federal Clean Air Act standards by requiring worksites with 100 employees or more to implement a Trip Reduction Ordinance, thereby reducing traffic congestion and the subsequent air pollution.

Because motor vehicle emissions are large sources of pollutants, addressing transportation issues can reduce air pollution considerably. Encouraging the use of alternative transportation methods (including the use of fuels other than conventional gasoline) will reduce such pollution. The City of Coronado has taken progressive and innovative approaches to address the issues involved with air quality management. For example, Coronado is one of only a few cities in the County to have implemented a Transportation Demand Management (TDM) Employer Trip Reduction Program and Ordinance. This Ordinance and Program was adopted to meet the requirements of the Federal and State Clean Air Acts as well as the Congestion Management Act by implementing policies to reduce traffic congestion and air pollution. In order to be consistent with the intentions of reducing air pollution on a regional basis, the City of Coronado has replaced the existing City Trip Reduction Ordinance with the SDAPCD's adopted Title XIII. The City contracts with the Coronado Transportation Management Association to administer this program.

Other programs that assist the reduction of traffic congestion and air pollution include:

- The City recently acquired Bridge Toll funds for subsidizing the Commuter Ferry Service. The ferry provides transportation between Coronado and downtown San Diego.
- The City has established an Intra-City Shuttle System, which provides transportation with an electric shuttle. The City is in the process of acquiring additional Compressed Natural Gas (CNG) shuttles.
- The City fleet vehicles are being converted from gasoline to Compressed Natural Gas systems.
- The City participates in the regional Transit Pass Subsidy Program. This program provides transit passes at a reduced rate to Coronado residents and workers.
- An Automated Vehicle Identification system will be installed on the San Diego-Coronado Bridge, which will reduce the number of vehicles that stop to pay tolls. This system will significantly improve traffic congestion and air quality on the bridge.

Other incentives that are incorporated into the TDM/Trip Reduction Program and Ordinance include promoting alternative transportation methods such as carpooling, vanpooling, bicycling, using mass transit, participating in home based and neighborhood based telecommuting, using the ferry, and providing a Guaranteed Ride Home Program for Coronado Commuter Club members. Also included within this program is an educational/promotional requirement that informs employers, employees and the public

about alternative methods of transportation. Additional related concepts, are addressed in the Chapter "F," the Transportation Element of the General Plan.

2. Energy Conservation

The City of Coronado obtains its energy supply of natural gas and electricity from the San Diego Gas & Electric Company (SDG &E). To meet the electricity demands of Coronado, SDG &E operates a local substation, which currently has approximately 90 MVA of firm capacity, with the ability to increase to 120 MVA. Natural gas is supplied to the City by two transbay gas mains. SDG &E is able to meet existing demands and is analyzing the feasibility of securing a second gas feeder system in order to improve service levels

The City of Coronado recognizes the importance of participating in programs and supporting the development of regional policies that will conserve energy resources. The San Diego Association of Governments (SANDAG) Energy Advisory Committee has identified three primary energy issues which could become problematic to the San Diego region if not properly addressed. First, since there are no significant naturally occurring energy resources within San Diego County, there is a strong reliance on outside energy sources. Therefore, efforts should be made to secure locally available energy resources..

The second issue identified by the Energy Advisory Committee is the region's high dependency on petroleum and natural gas products. Part of this problem can be attributed to the high reliance upon motor vehicles for transportation purposes. Importing and using high quantities of fossil fuels causes negative public health risks as well as economic impacts to the region. The establishment of alternative energy technologies such as solar heating, cogeneration, and development of vehicles that use fuel such as electricity, natural gas, methanol, hydrogen, ethanol, and propane should be encouraged because of the potential these technologies have to reduce air pollution and provide more efficient uses of energy.

The third issue identified by the Energy Advisory Committee is the overall lack of efficiency regarding energy resources. In 1991, less than forty percent (40%) of all energy consumed within the San Diego region performed useful work. Over sixty percent (60%) of all energy consumed was lost as waste heat from buildings, vehicle tailpipes, and industrial and utility stacks.⁷ Conservation efforts for residential, commercial, industrial, and public facilities can include technological improvements in lighting, appliances and equipment, water heating equipment, pools and spas, and ventilation systems. Also, research and development should be encouraged for renewable energy resources like solar power, biomass (using wood products for energy), geothermal energy, and use of ocean water.

Another technique that effectively conserves energy and minimizes air pollution is mixed use development. Combining land uses reduce the number of vehicle trips and trip length by encouraging walking, bicycling, or transit modes of transportation.

Objectives For Obtaining The Conservation Element Goal:

In order to protect, conserve, and enhance the natural and cultural resources within the City, the following objectives and policies shall be implemented:

A. Water Resources

The City shall encourage the conservation of water supplies in order to minimize the effects of water supply shortages. Because the City, along with the San Diego region, is dependent upon imported water the City shall support regional and statewide efforts, programs, and policies (including water conservation) that will ensure adequate supplies of water are available to meet the present and future population demands.

The City shall practice sound water conservation management and irrigation techniques that are consistent with xeriscape principles when maintaining publicly owned property, such as parks and the golf course, and will periodically verify that proper water conservation is taking place. In addition, the City shall also require new development or redevelopment to comply with the City's Water Conservation Program.

To protect sensitive environmental resources, the City advocates improvement of the ocean and bay water quality. In addition, the City shall oppose any activity without offsetting public benefit that is harmful to marine resources or habitats. Preservation of sport and commercial fishing facilities shall be encouraged. Moreover, the City shall prohibit the discharge of any toxic or hazardous wastes into City storm drains, San Diego Bay, or the Ocean.

The City shall coordinate with other governmental agencies regarding the planning or expansion of future boat anchorage/marina facilities. If dredging or filling is required for anchorage, mooring, or marina facilities, compliance with the regulations set forth in "Diking, Dredging, Filling and Dredge Spoils Disposal," Chapter 86.72 of the Municipal Code shall be a condition of approval. In addition, substantial efforts shall be made to minimize and mitigate adverse environmental impacts.

B. Land and Cultural Resources

As discussed previously, the City's shorelines offer wide, sandy beaches that are significant natural resources which are considered to be important environmental assets. The beaches of Coronado provide residents and visitors with recreational and leisurely opportunities. The City shall establish shoreline preservation strategies in order to limit and mitigate the negative effects of shoreline erosion. Moreover, the City shall protect the coastal and bay shorelines as much as it is feasible. This task requires continuous coordination with State and Federal agencies, specifically, the U.S. Navy. As indicated

earlier, the Navy periodically replenishes the sand along the beaches. Efforts shall be made by the City to ensure this replenishment continues. Also, in the event it becomes necessary, the City shall implement or encourage the appropriate agency to implement proven shoreline protection measures.

The City shall discourage any activity or development that would significantly alter the topography/ land surface, degrade the City's scenic beauty, or damage the natural resources discussed within this Element. No development shall have significant unmitigated impact upon sensitive ecosystem habitats. In addition, preservation of the salt ponds as a resource for salt extraction shall be encouraged, and development within or adjacent to the salt ponds shall be prohibited as long as salt extraction can still occur. The City shall preserve the salt ponds as a natural habitat preserve for wildlife if salt extraction ceases.

The protection and conservation of cultural resources shall be encouraged and supported by the City. The City shall adopt a Historic Preservation Element as part of the General Plan, which will encourage the recognition and preservation of historical resources. The City shall also support the voluntary designation of historical structures, with approval from the Historical Resources Commission. In addition, preservation, documentation, or recovery of historical, archeological, or paleontological resources shall be required if such resources are threatened by new development. The California Environmental Quality Act (CEQA) also provides protection for these resources by regulating the preservation of cultural resources.

C. Biological Resources

As indicated earlier, the City has identified five important biological communities: Open Coast Sandy Beach, Bay, Mudflat, Coastal Salt Marsh and the Coastal Strand. Each of these communities support important wildlife and plants, as such the City recognizes the importance of each community. Conservation and protection policies have been established within the Open Space Element.

D. Other Resources-Air Quality and Energy Conservation

Air quality and energy are extremely important natural resources that need to be addressed on a regional basis. Coronado supports development of coordinated strategies by the SDAPCD and SANDAG necessary to enhance the region's air quality. Given that the region's resources are limited, the City shall support the development and implementation of a regional energy plan. This will require coordination with governmental agencies, energy supplying companies, the private sector, and the public in order to achieve this.

The City Council has addressed important air quality issues by adopting the Employer Trip Reduction Ordinance, contracting services with the Coronado Transportation Management Association to implement the TDM/TRO, as well as approving a number of other programs/policies that will reduce congestion, air pollution, and energy

consumption. The City shall continue to encourage the utilization of alternative transportation methods as well as supporting the development and use of alternative fuels. Furthermore, the City shall continue to pursue funding to implement congestion management programs.

Since an identified problem with implementing alternative fuel policies is the lack of efficient energy infrastructure, the City shall continue supporting the development of such infrastructure in order to make the use of alternative fuel sources more readily accessible. For example, the conversion of the fleet vehicles to Compressed Natural Gas systems requires coordination with energy suppliers and the private sector.

The City shall encourage the use of energy efficient designs, materials, and structures in order to conserve maximum amounts of energy. Title 24 of the State of California Energy Code mandates that the City require all residential and nonresidential development to comply with specific energy conservation regulations.

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Abstract

1. The purpose of this study is to determine the effect of the following factors on the rate of reaction:

2. The reaction is the following: $2H_2O_2 \rightarrow 2H_2O + O_2$. The rate of reaction is measured by the volume of oxygen gas evolved per unit time.

3. The factors studied are: (a) the concentration of the reactants, (b) the temperature, and (c) the presence of a catalyst.

4. The results of the study are as follows: (a) the rate of reaction increases with increasing concentration of the reactants, (b) the rate of reaction increases with increasing temperature, and (c) the rate of reaction is greatly increased by the presence of a catalyst.

5. The following conclusions are drawn from the study: (a) the rate of reaction is directly proportional to the concentration of the reactants, (b) the rate of reaction is directly proportional to the temperature, and (c) the rate of reaction is greatly increased by the presence of a catalyst.

6. The following recommendations are made: (a) the concentration of the reactants should be kept as high as possible, (b) the temperature should be kept as high as possible, and (c) a catalyst should be used whenever possible.

7. The following limitations are noted: (a) the study was limited to the reaction of hydrogen peroxide, (b) the study was limited to the rate of reaction, and (c) the study was limited to the effect of the factors mentioned above.

8. The following sources of information are cited: (a) the textbook, "Chemistry: Principles and Reactions" by Zumdahl and Zumdahl, (b) the journal, "Journal of Chemical Education", and (c) the internet.

9. The following acknowledgments are made: (a) the author thanks his advisor, Dr. [Name], for his guidance and assistance, (b) the author thanks his friends and family for their support, and (c) the author thanks the U.C. Berkeley Libraries for their assistance in obtaining the necessary materials.

10. The following references are listed: (a) Zumdahl, S. L., and Zumdahl, S. L. "Chemistry: Principles and Reactions." 6th ed. Boston: Houghton Mifflin Company, 2002. (b) "Journal of Chemical Education." (c) "Internet."

11. The following appendices are included: (a) Appendix A: Data for the reaction of hydrogen peroxide, (b) Appendix B: Data for the reaction of hydrogen peroxide, and (c) Appendix C: Data for the reaction of hydrogen peroxide.

12. The following conclusions are drawn from the study: (a) the rate of reaction is directly proportional to the concentration of the reactants, (b) the rate of reaction is directly proportional to the temperature, and (c) the rate of reaction is greatly increased by the presence of a catalyst.

13. The following recommendations are made: (a) the concentration of the reactants should be kept as high as possible, (b) the temperature should be kept as high as possible, and (c) a catalyst should be used whenever possible.